Fig. 1

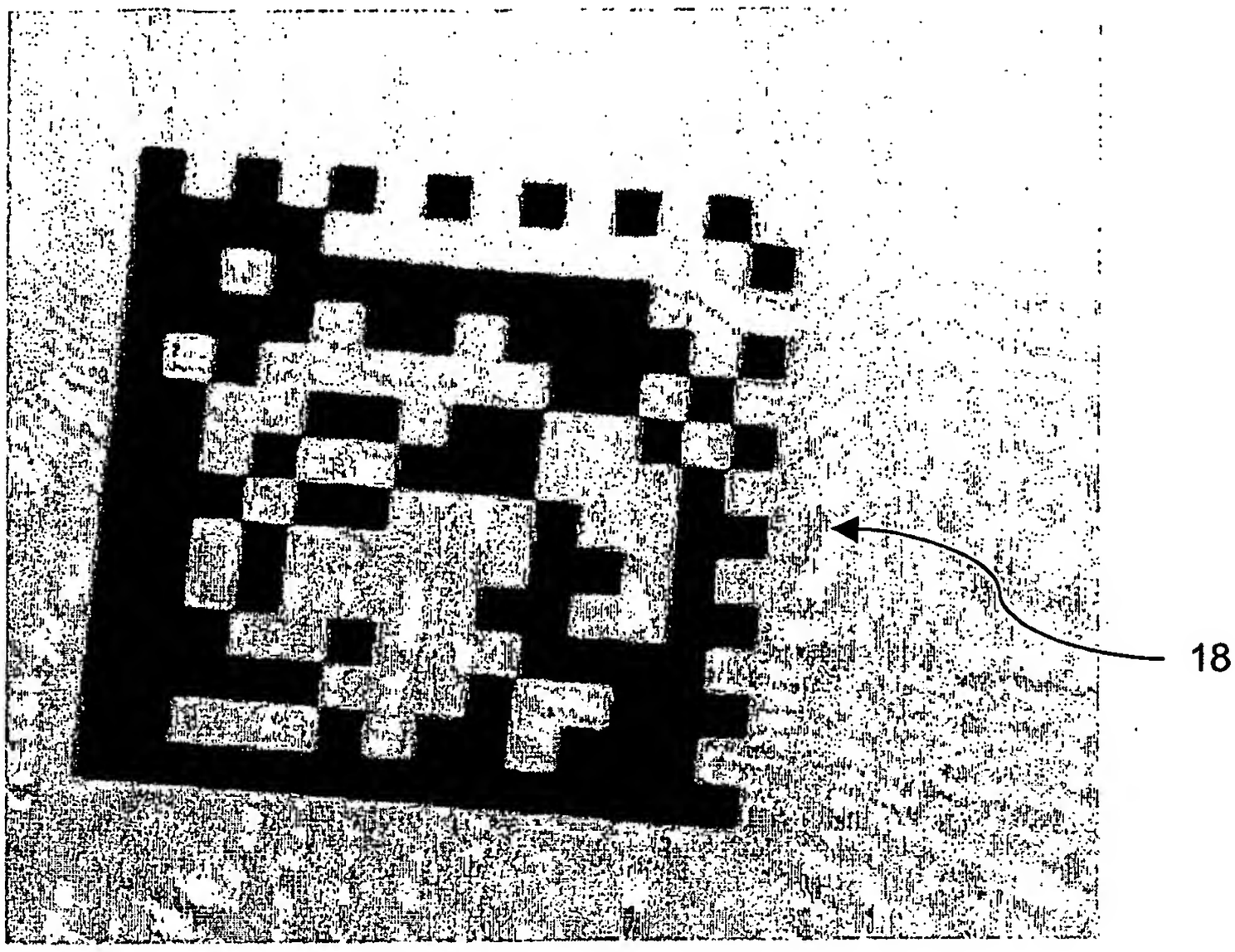


Fig. 2

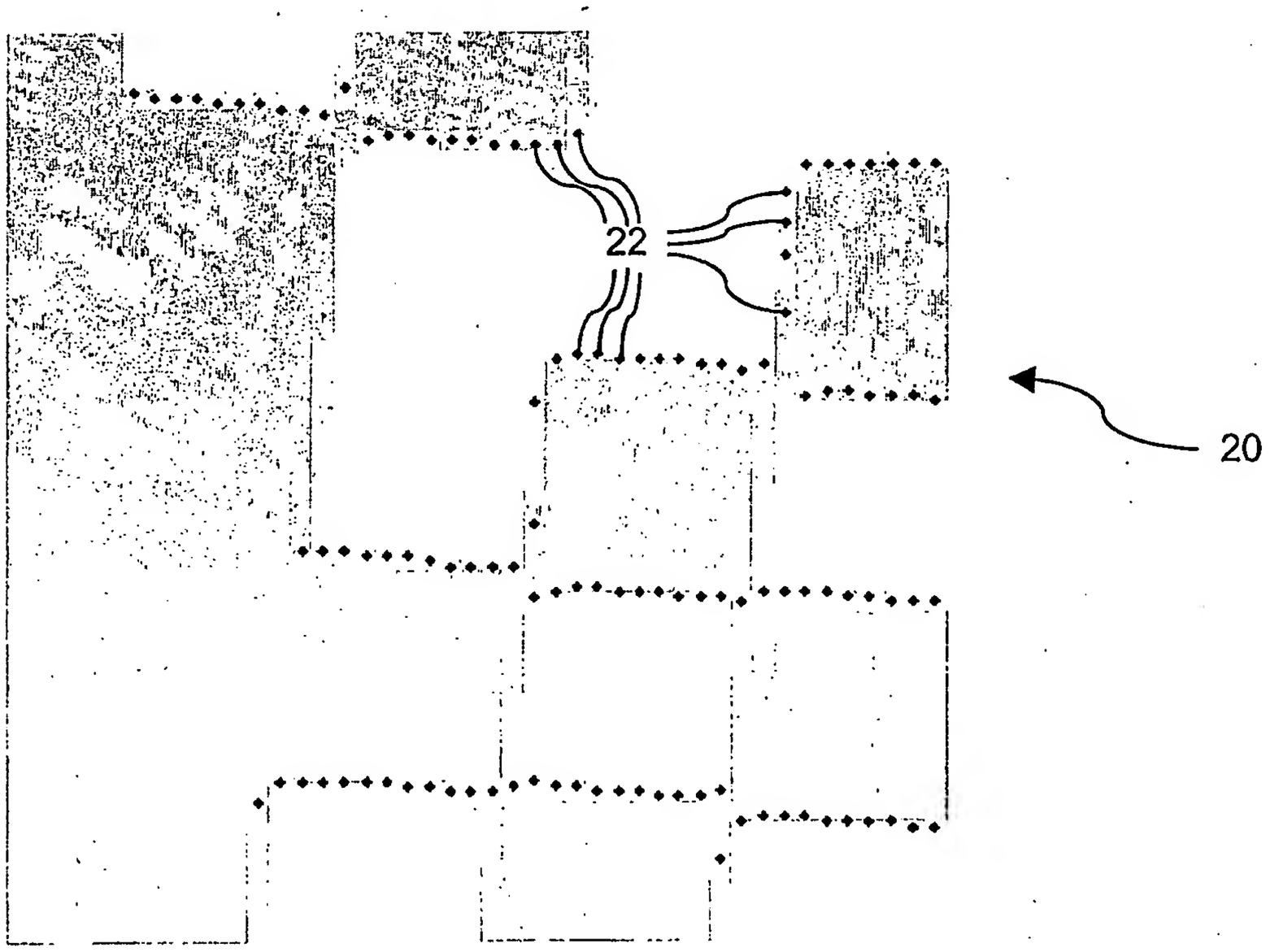


Fig. 3

NBD	1	2	3	4	5	6
1			3,1			
2			3,2			
3			3,3			
4			3,4			
5			3,5			
6						

NBD	1	2	3	4	5	6
1						
2			3,2			
3			3,3			
4			3,4			
5			3,5			
6			3,6			

Fig. 4

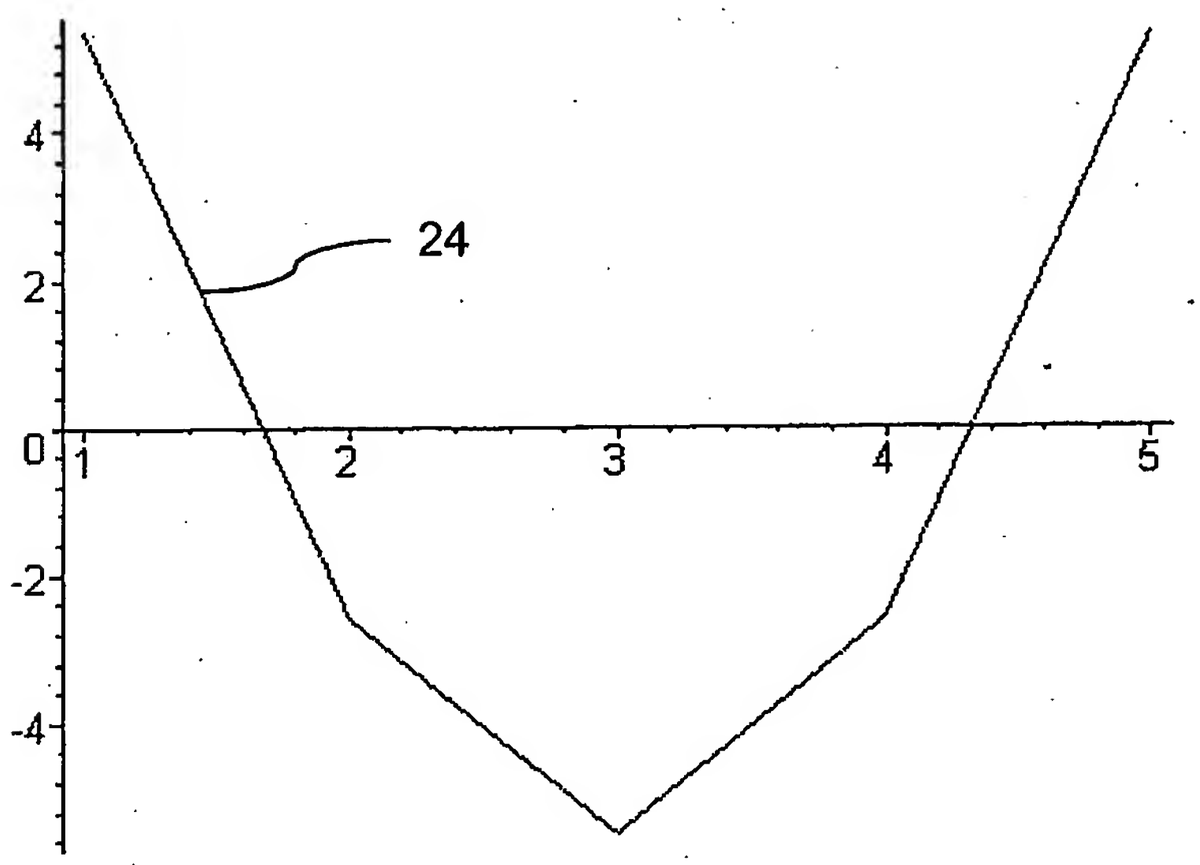


Fig. 5

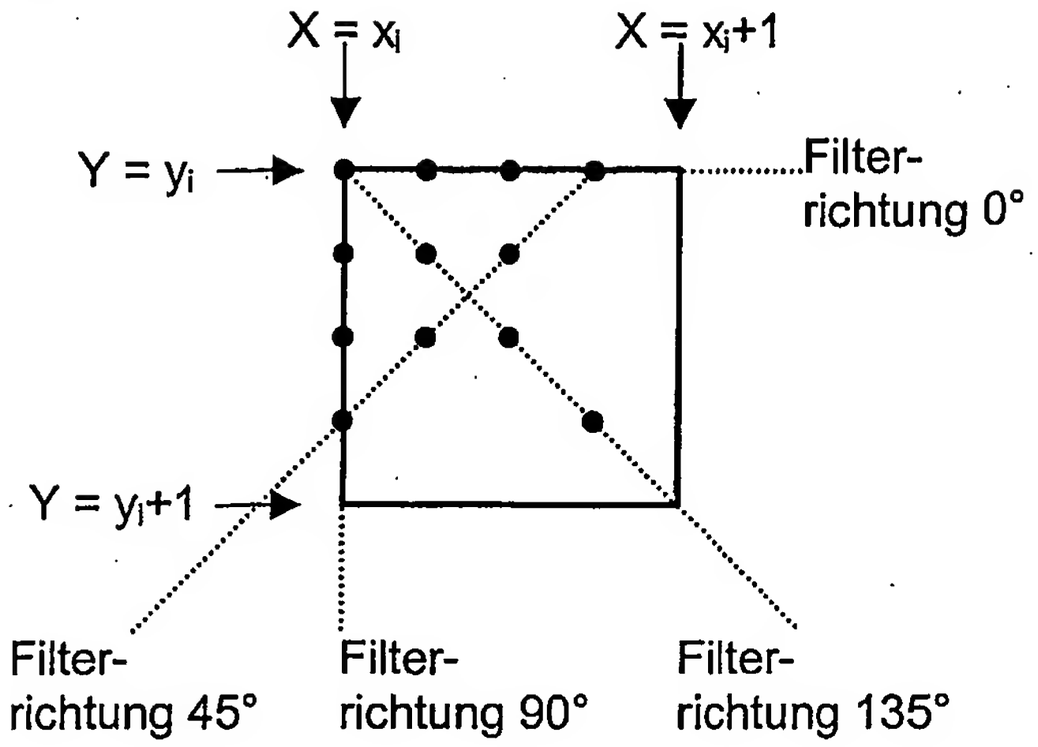

X = xi
X = xi+1
Y = yi
Filter-
richtung 0°
Y = yi+1
Filter-
richtung 45°
Filter-
richtung 90°
Filter-
richtung 135°

Fig. 6

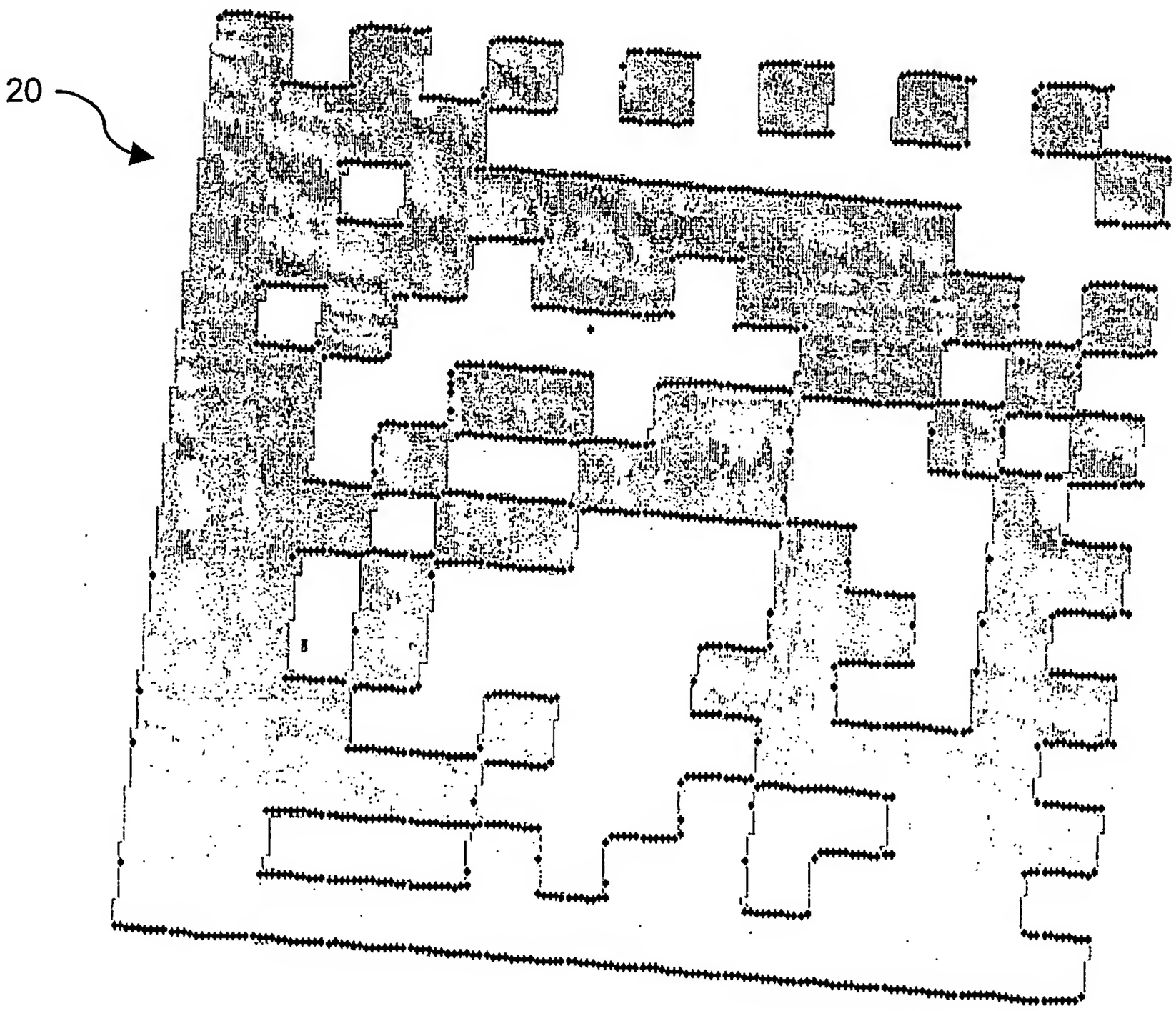

20

Fig. 7

Filterrichtung	Kantenrichtung	X-Koordinate des Konturpunktes i	Y-Koordinate des Konturpunktes i
0°	90°	$x_i + \Delta\delta$	y_i
90°	0°	x_i	$y_i + \Delta\delta$
45°	135°	$x_i + 0{,}75 - \Delta\delta$	$y_i + \Delta\delta$
135°	45°	$x_i + \Delta\delta$	$y_i + \Delta\delta$

Fig. 8

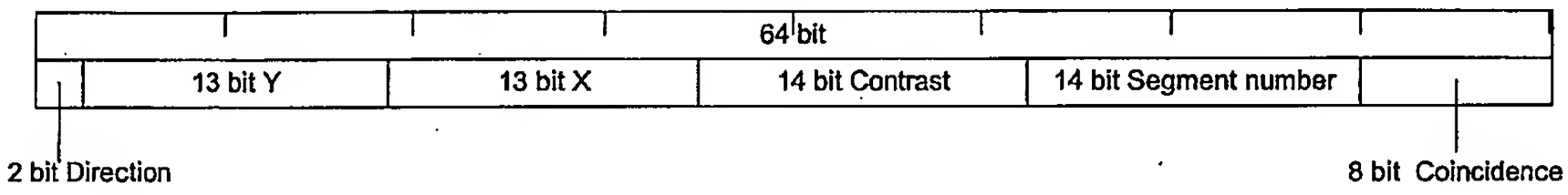


Fig. 9

```
00 18 76 B0 B6 00 01 00    40 1E AF 00 88 80 02 00
80 18 AE 00 1F 80 03 00    80 1E AE 4F CB 80 04 00
...
81 CC E2 C0 57 80 62 00    81 D4 E2 80 78 C0 5E 04
81 D4 E3 00 34 80 5E 04    81 D2 E3 80 2F 40 5E 00
...
D8 22 C9 D0 D2 12 B7 00    D8 22 CB 10 26 92 C5 00
00 00 00 00 00 00 00 00
```

Fig. 10

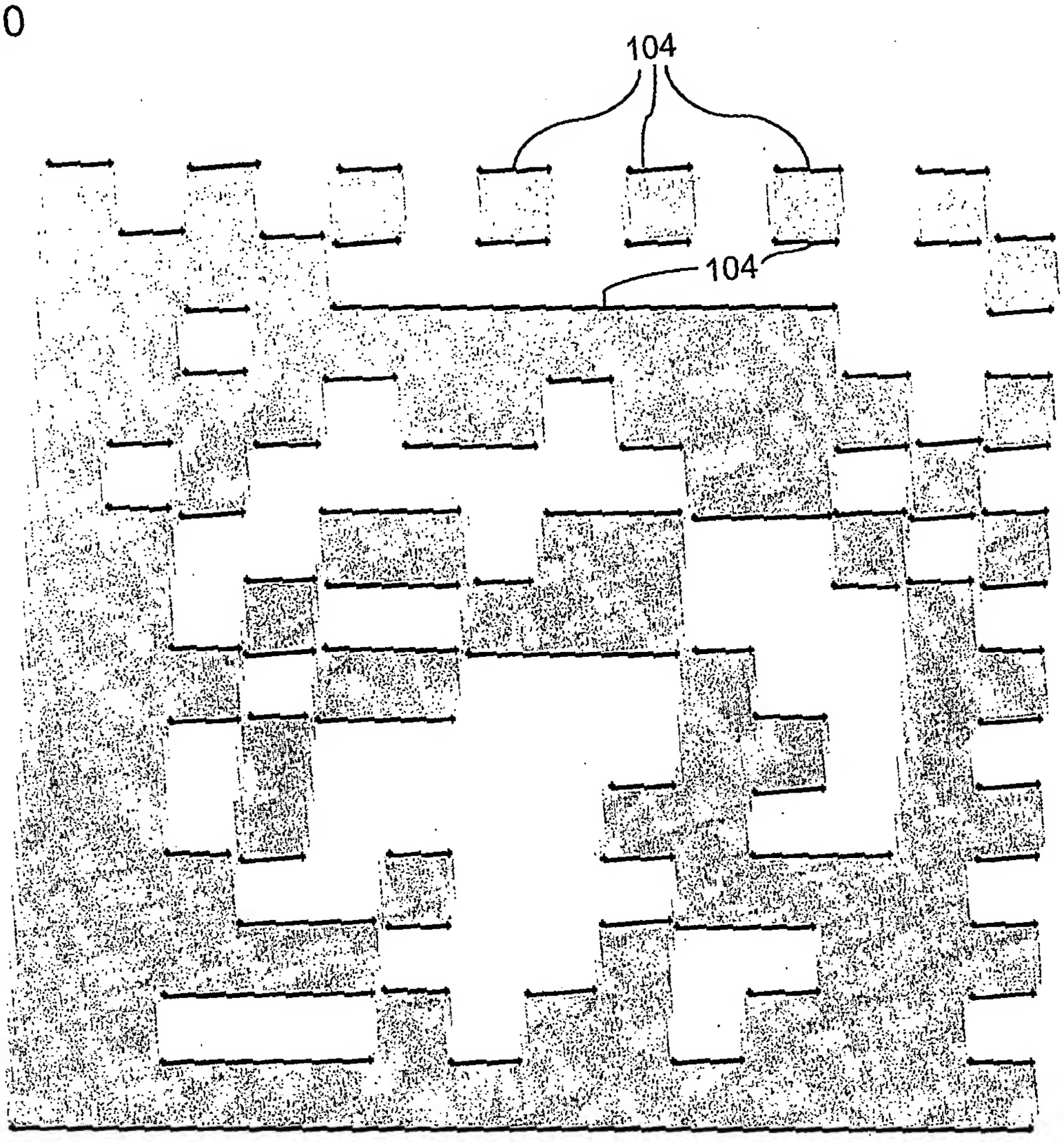
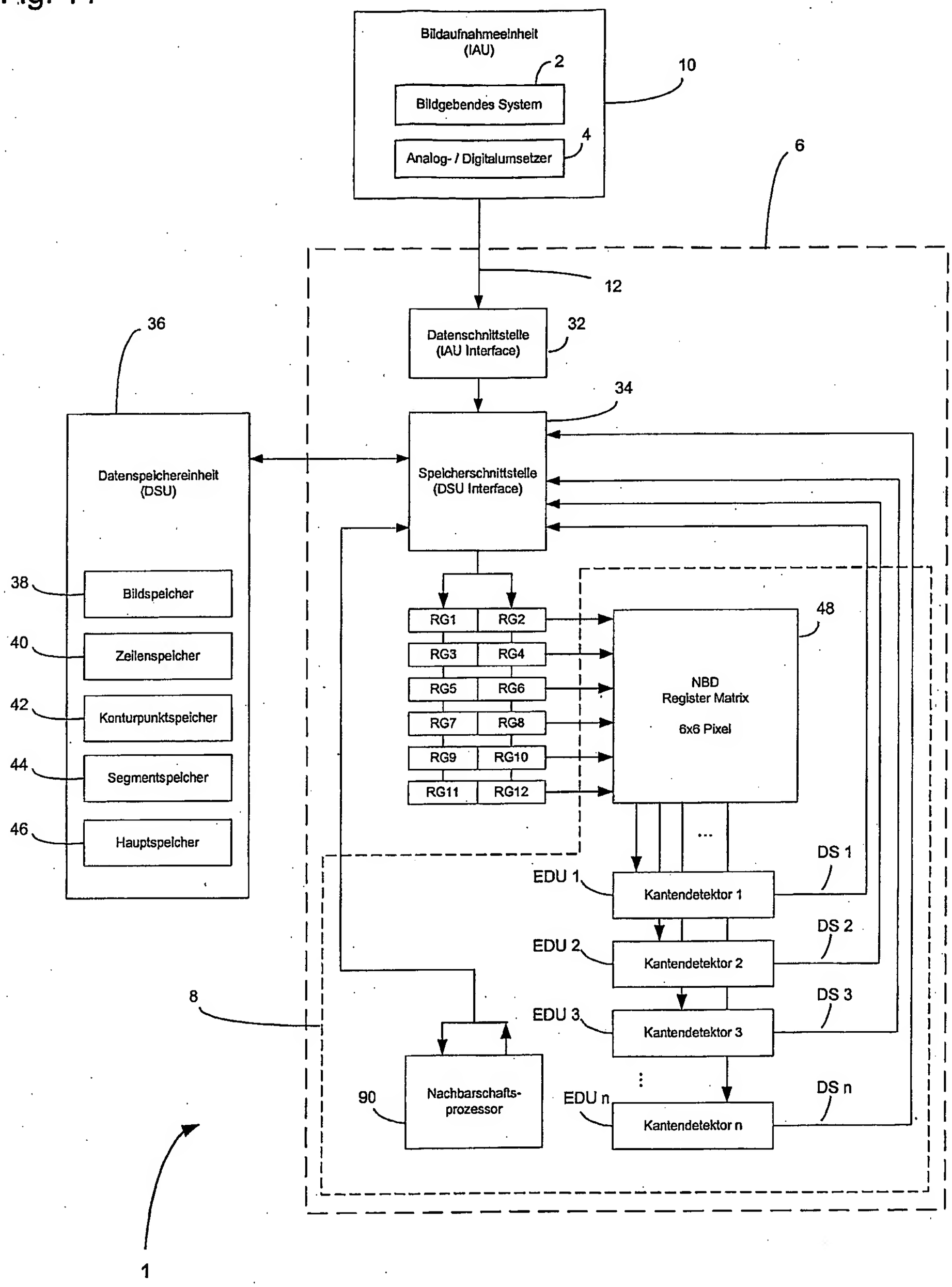


Fig. 11


Bildaufnahmeeinheit
(IAU)
2
10
Bildgebendes System
4
Analog- / Digitalumsetzer
6
12
36
32
Datenschnittstelle
(IAU Interface)
34
Datenspeichereinheit
(DSU)
Speicherschnittstelle
(DSU Interface)
38
Bildspeicher
40
Zeilenspeicher
42
Konturpunktspeicher
44
Segmentspeicher
46
Hauptspeicher
RG1
RG2
RG3
RG4
RG5
RG6
RG7
RG8
RG9
RG10
RG11
RG12
48
NBD
Register Matrix
6x6 Pixel
...
DS 1
EDU 1
Kantendetektor 1
DS 2
EDU 2
Kantendetektor 2
DS 3
EDU 3
Kantendetektor 3
DS n
EDU n
Kantendetektor n
8
90
Nachbarschafts-
prozessor
1

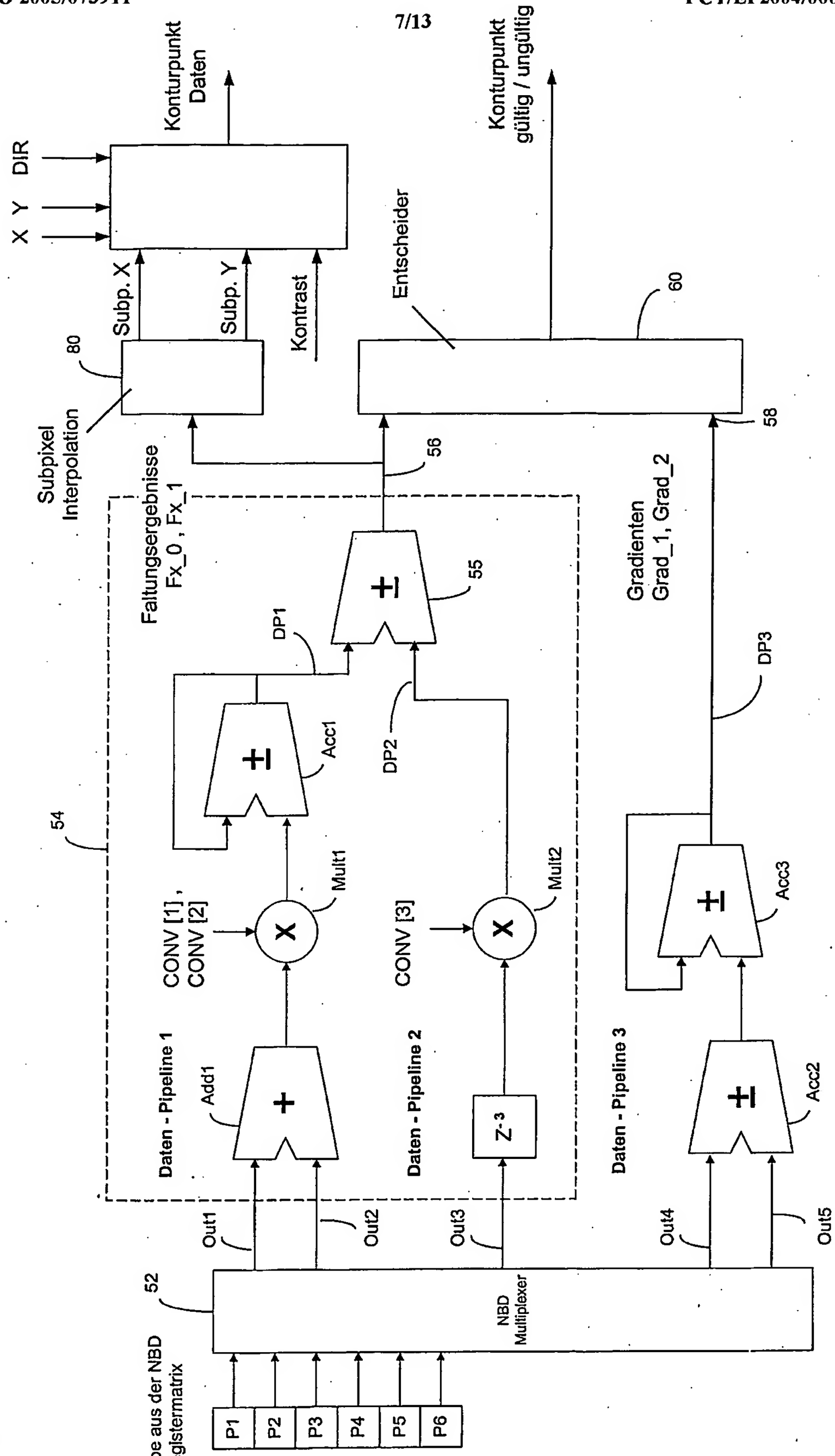

Konturpunkt Daten
Konturpunkt gültig / ungültig
X Y DIR
Subp. X
Subp. Y
Kontrast
Entscheider
60
80
Subpixel Interpolation
58
56
Faltungsergebnisse Fx_0 , Fx_1
54
55
DP1
DP2
DP3
Acc1
CONV [1] , CONV [2]
Mult1
CONV [3]
Mult2
Gradienten Grad_1, Grad_2
Acc3
Daten - Pipeline 1
Add1
Daten - Pipeline 2
Z-3
Daten - Pipeline 3
Acc2
Out1
Out2
Out3
Out4
Out5
52
NBD Multiplexer
Eingabe aus der NBD Registermatrix
P1
P2
P3
P4
P5
P6

Fig. 12

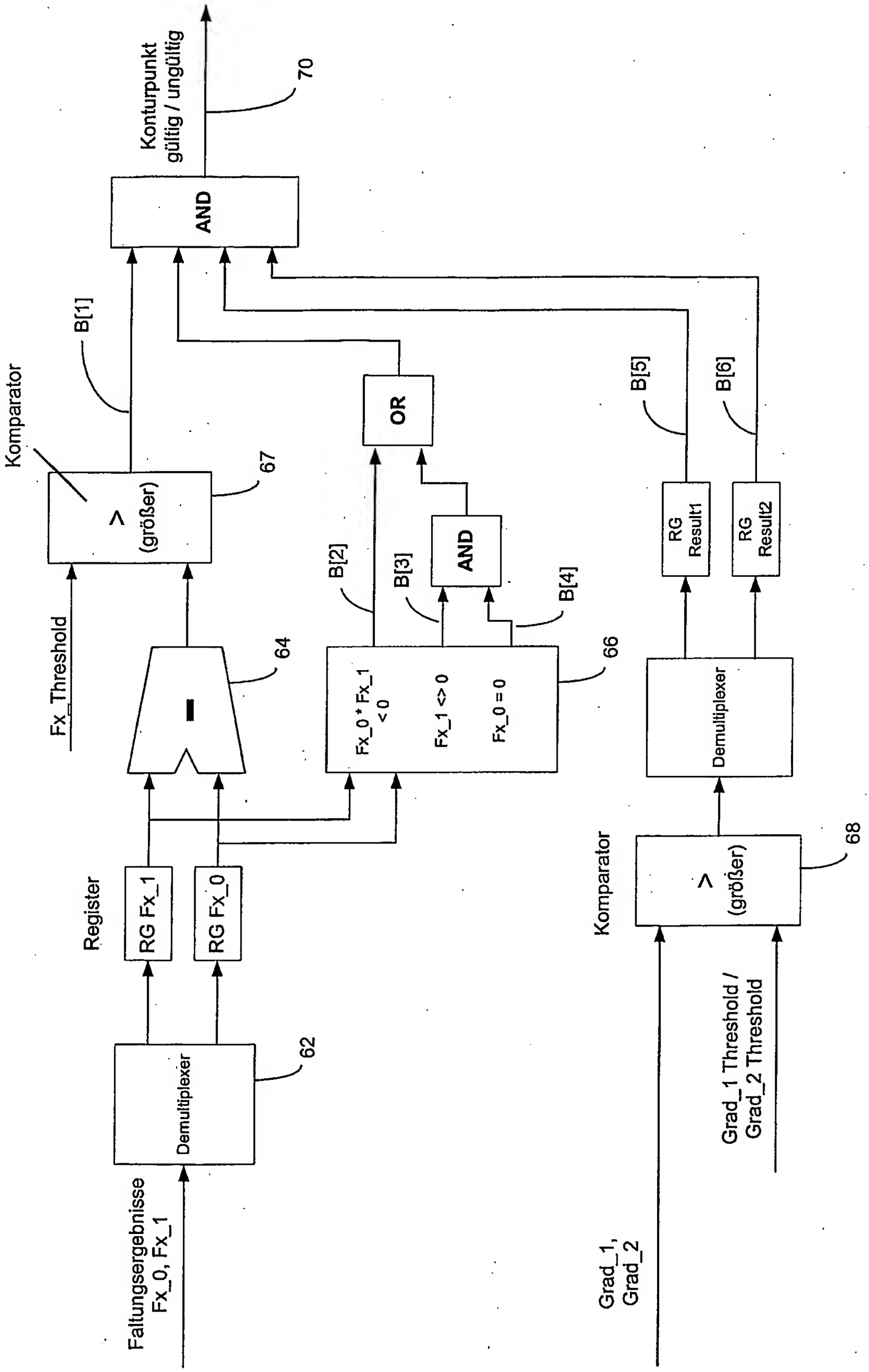

Konturpunkt gültig / ungültig
70
AND
B[1]
Komparator
67
> (größer)
Fx_Threshold
64
OR
B[2]
B[3]
AND
B[4]
66
Fx_0 * Fx_1 < 0
Fx_1 <> 0
Fx_0 = 0
B[5]
B[6]
RG Result1
RG Result2
Demultiplexer
Komparator
68
> (größer)
Grad_1 Threshold / Grad_2 Threshold
Grad_1, Grad_2
Register
RG Fx_1
RG Fx_0
Demultiplexer
62
Faltungsergebnisse Fx_0, Fx_1

Fig. 13

Fig. 14

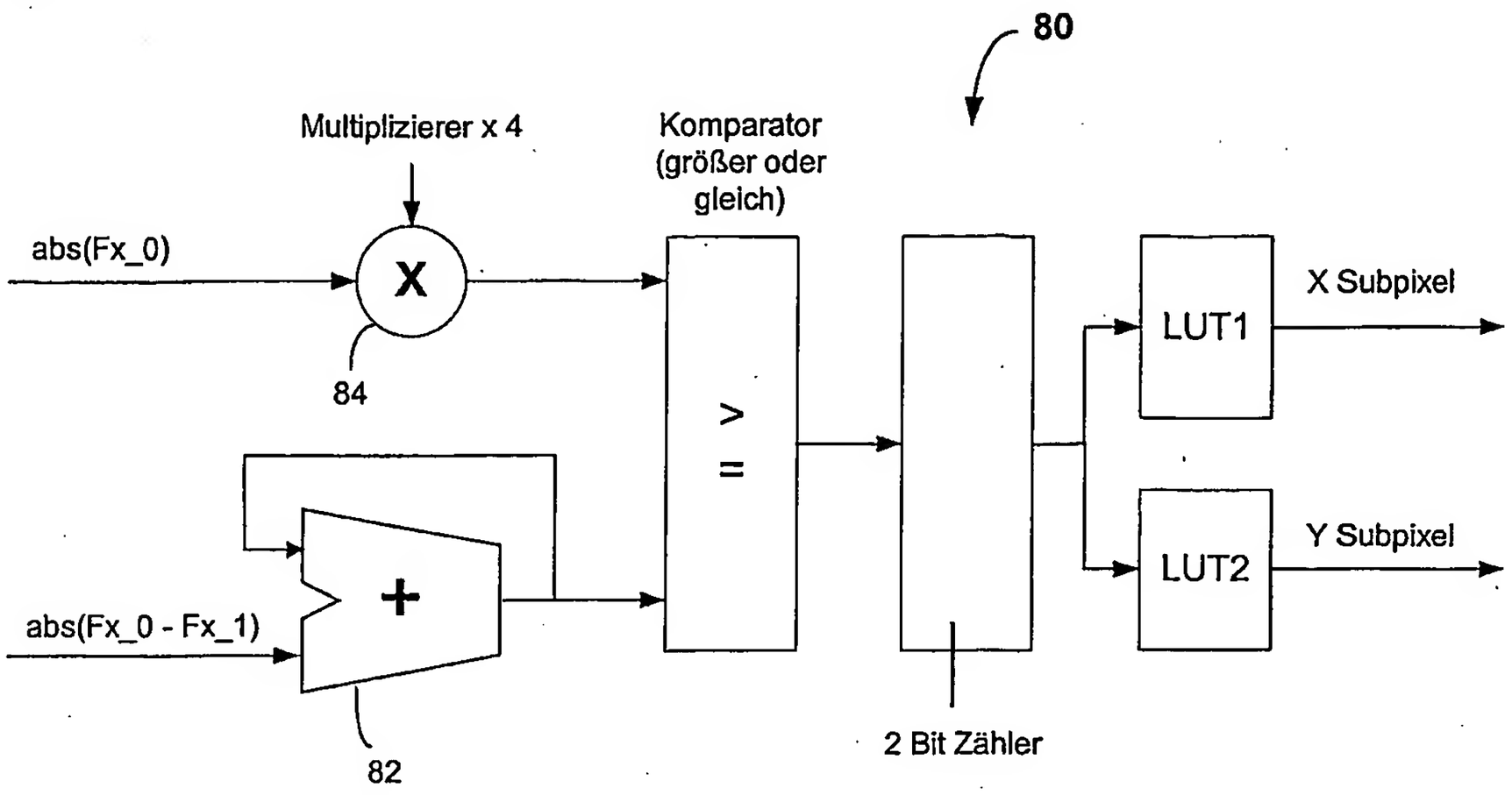


Fig. 15

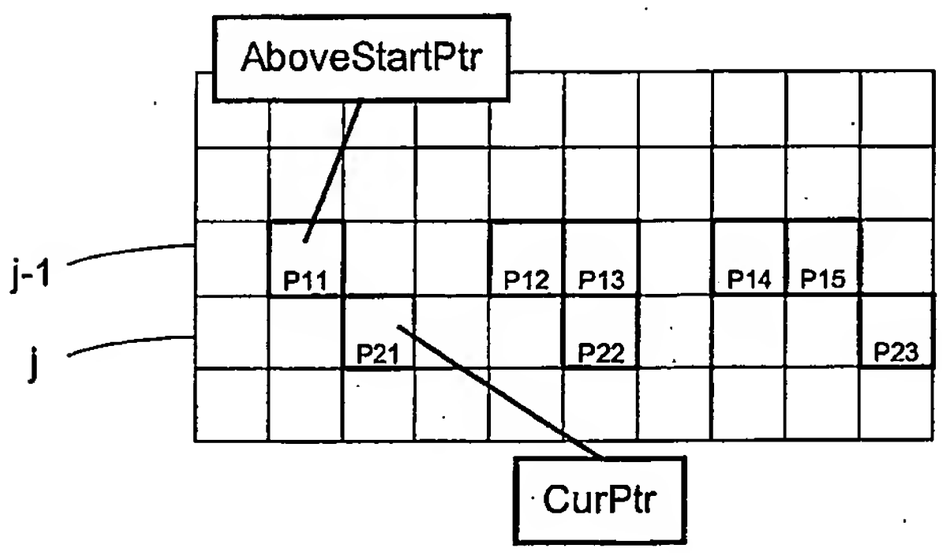


Fig. 16

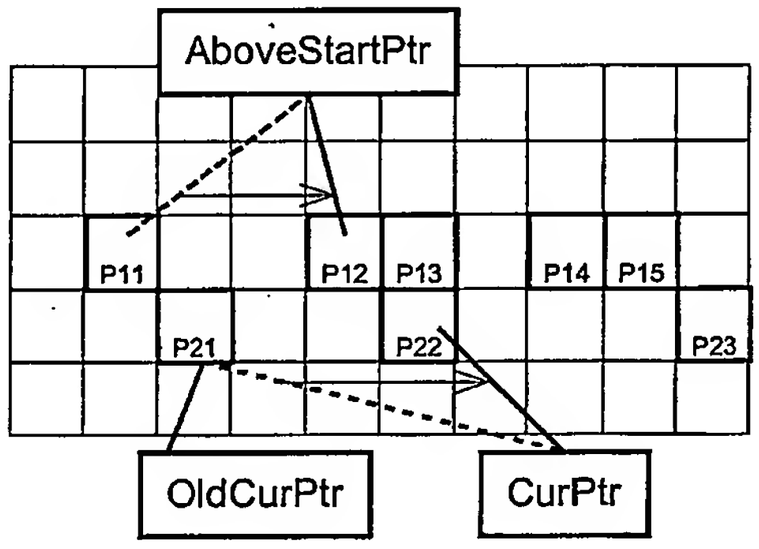


Fig. 17

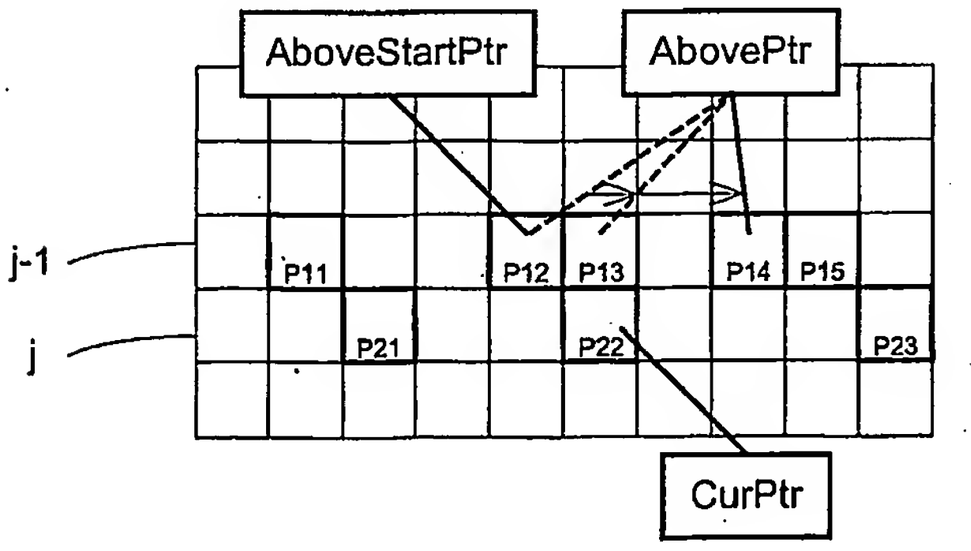
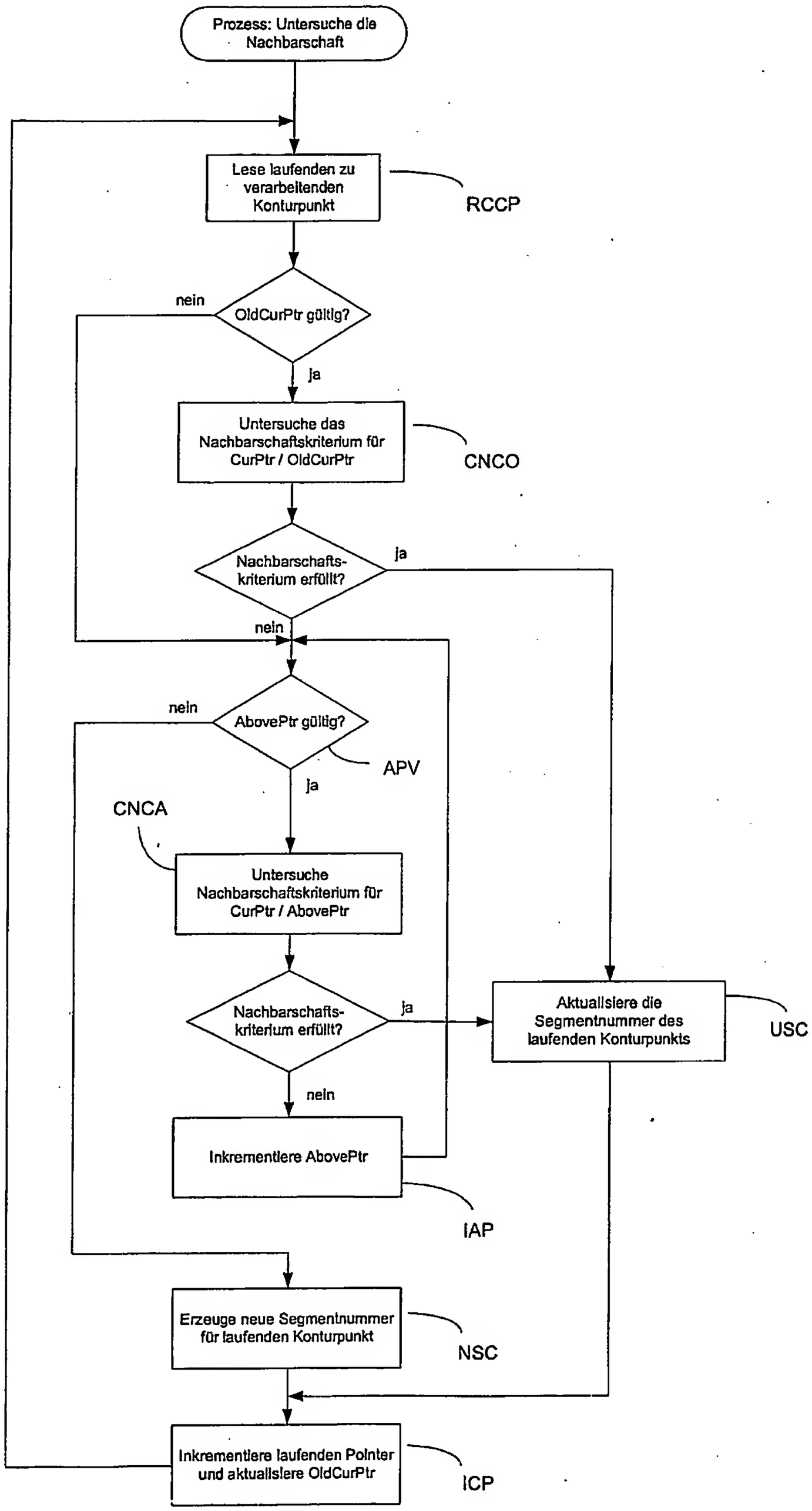


Fig. 18


Prozess: Untersuche die Nachbarschaft
Lese laufenden zu verarbeitenden Konturpunkt
RCCP
nein
OldCurPtr gültig?
Ja
Untersuche das Nachbarschaftskriterium für CurPtr / OldCurPtr
CNCO
Nachbarschafts-kriterium erfüllt?
ja
nein
nein
AbovePtr gültig?
APV
ja
CNCA
Untersuche Nachbarschaftskriterium für CurPtr / AbovePtr
Nachbarschafts-kriterium erfüllt?
ja
Aktualisiere die Segmentnummer des laufenden Konturpunkts
USC
nein
Inkrementiere AbovePtr
IAP
Erzeuge neue Segmentnummer für laufenden Konturpunkt
NSC
Inkrementiere laufenden Pointer und aktualisiere OldCurPtr
ICP

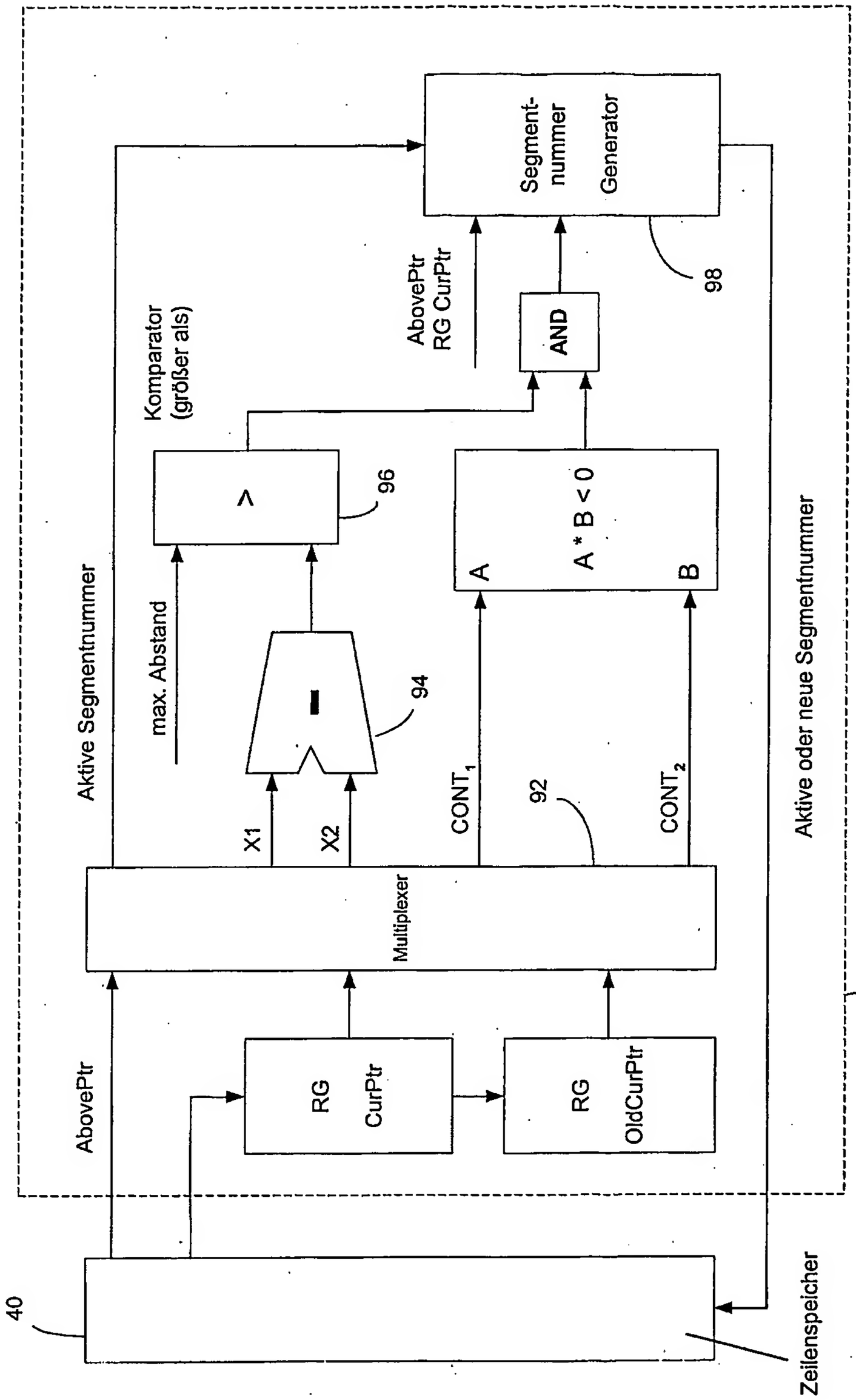

Segment-
nummer
Generator
98
AbovePtr
RG CurPtr
AND
Komparator
(größer als)
>
96
max. Abstand
I
94
X1
X2
A
A * B < 0
B
CONT1
92
CONT2
Aktive Segmentnummer
Multiplexer
Aktive oder neue Segmentnummer
90
AbovePtr
RG
CurPtr
RG
OldCurPtr
40
Zeilenspeicher

Fig. 19

Fig. 20

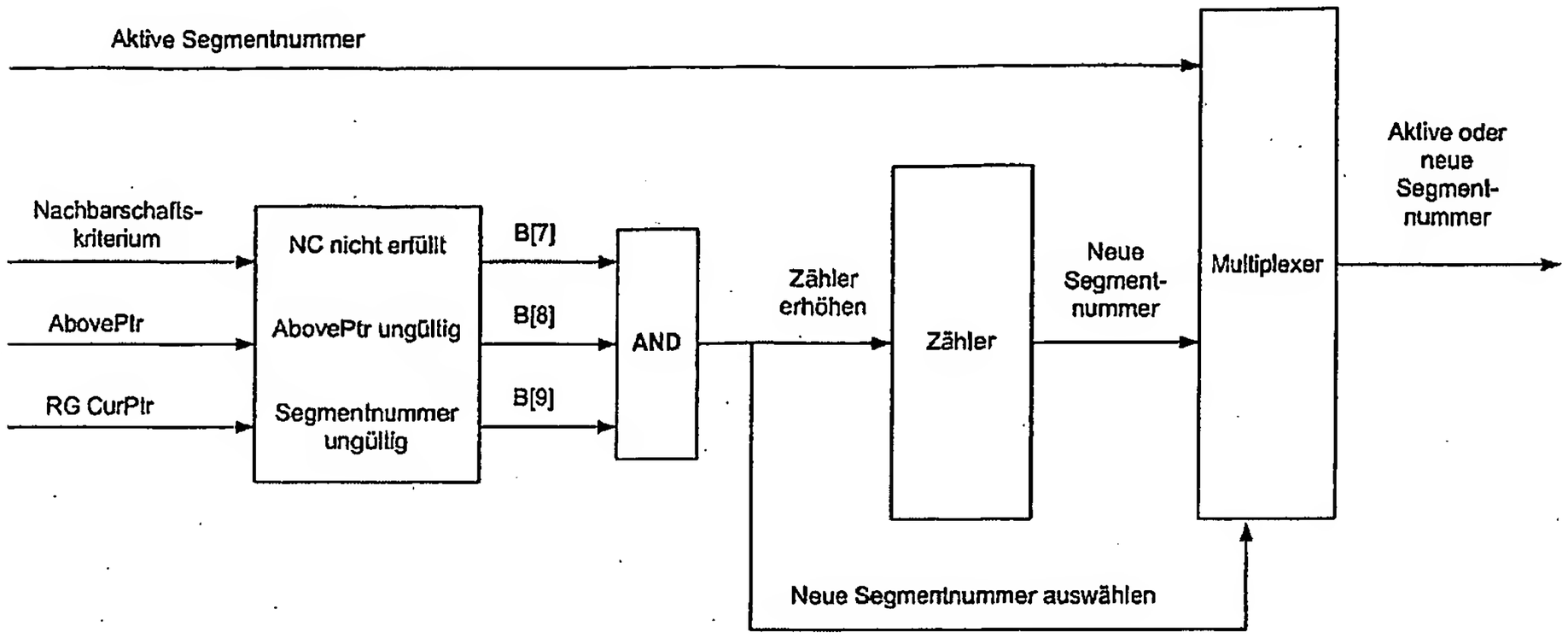


Fig. 21

			Datenpipeline DP1			Datenpipeline DP2		
Clock	Out1	Out2	Add1	Mult1	Acc1	Out3	Z^{-3}	Mult2
0	P2	P4				P3		
1	P1	P5	P2+P4			P3		
2	P3	P5	P1+P5	(P2+P4) CONV[2]		P4		
3	P2	P6	P3+P5	(P1+P5) CONV[1]		P4	P3	
4			P2+P6	(P3+P5) CONV[2]	(P2+P4) CONV[2] + (P1+P5) CONV[1]		P3	P3 CONV[3]
5				(P2+P6) CONV[1]			P4	P3 CONV[3]
6					(P3+P5) CONV[2] + (P2+P6) CONV[1]		P4	P4 CONV[3]
7								P4 CONV[3]
8								
9								
10								

Datenpipeline DP3						Entschelder	Konturpunkt
Clock	Acc2	Out4	Out5	Acc3	Acc4		
0		P1	P2				
1		P5	P6	P1+P2			
2		P3	P4	P5+P6	P1+P2		
3		P5	P6	P3-P4	(P1+P2)-(P5+P6)		
4				P5+P6	P3-P4	(P1+P2) - (P5+P6) > Grad_1 Threshold?	
5	GPx_0				P3-P4	(P3-P4) > Grad_2 Threshold?	
6							
7	GPx_1						
8						GPx_1 - GPx_0	
9						GPx_1 - GPx_0 > Fx_Threshold?	
10							Valid or Invalid

Fig. 22

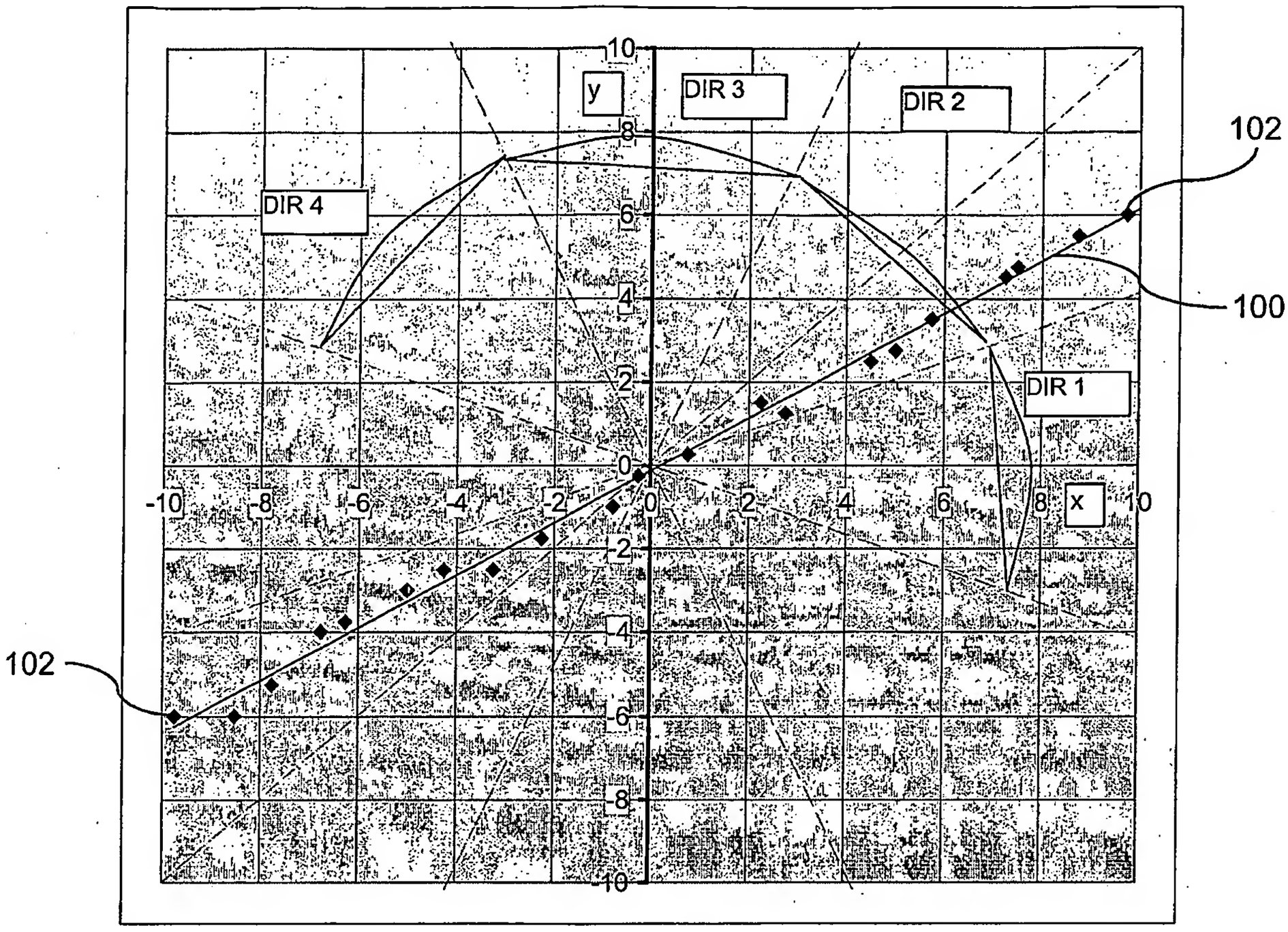
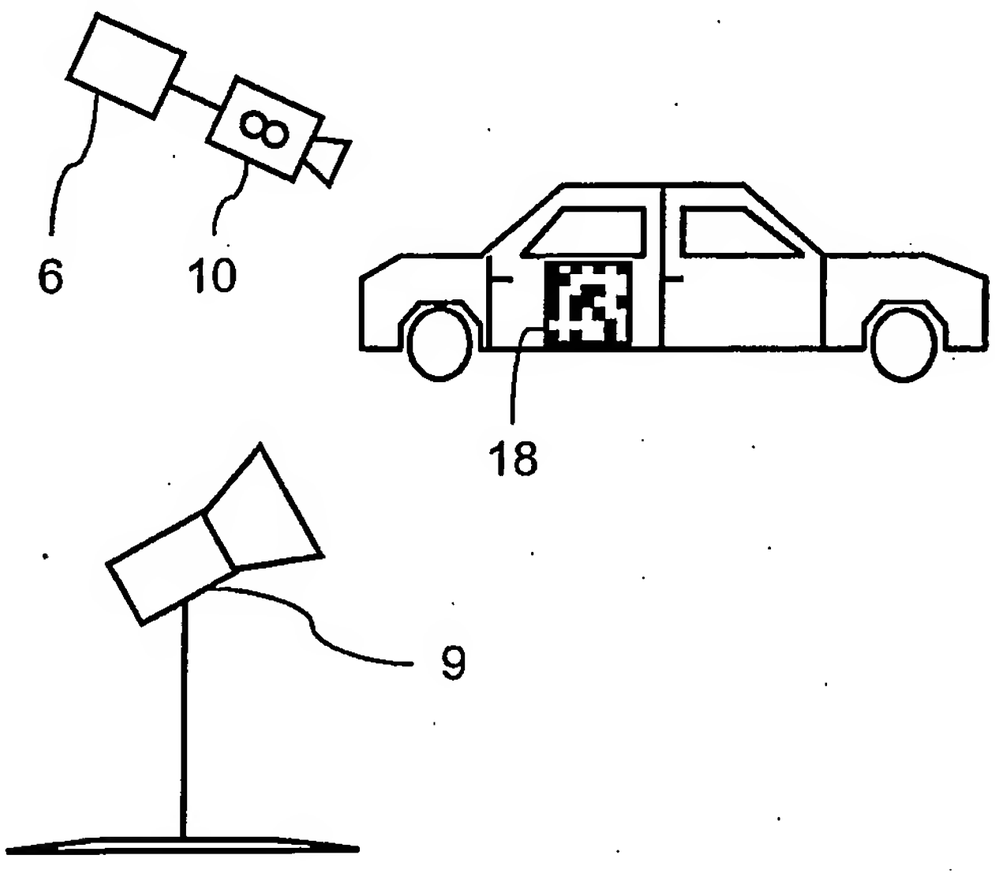

y
10
8
6
4
2
0
-2
-4
-6
-8
-10
-10
-8
-6
-4
-2
0
2
4
6
8
10
x
DIR 1
DIR 2
DIR 3
DIR 4
102
100
102

Fig. 23


8
6
10
18
9